Fully Automatic Digital Micro Vickers Hardness Tester DVS-1XYZ-3

1. Overview

DVS-1XYZ-3 is a new generation of fully automatic Micro Vickers (Knoop) hardness tester. It adopts the integrated design of hardness tester and panel computer; With Windows 7 operating system, it has all functions of computer. With CCD image acquisition system, it can show the indentation image directly on the touch screen and automatically get the Vickers or Knoop hardness value. It takes over the old method of measuring the diagonal length by eyepiece, avoids the stimulation and visual fatigue of the light source of the eyepiece, and protects the eyesight of the operator. It is a major innovation of fully automatic Micro Vickers hardness tester.

2. Features:

- With 1 pc 10.1 inch touch screen panel computer and 5.6 inch touch screen. Support automatic working and manual operation.
- All the testing parameters can be selected on the panel computer. With touching screen, it operates quickly and conveniently and displays clearly and intuitively.
- With CCD image acquisition system, it shows the image clearly and gets the hardness value just by touching the screen.
- With one indenter and two objectives, automatic recognition and shifting between the objective and the indenter, automatically get the Vickers (Knoop) hardness value.
- With the function of hardness scale conversion.
- The system has two languages: English or Chinese (or both).
- With USB , VGA and LAN interfaces, the hardness measurement can be print out by USB interface.

- It can automatically save the measuring data, generate the hardness-depth curve and save as WORD or EXCEL document.
- With motorized X-Y test table, automatic focusing and automatic measuring, it realizes the fully automation of Micro Vickers hardness testing.

Specification:

Motorized X-Y working table		
1	Table size	200*200mm
2	Drive by motor	Working table can working automatically by software control (X-Y)
3	Maximum moving distance	50*50mm
4	Minimum moving distance	1μm
5	Moving speed	adjustable

Hardness Tester		
NO.	Technical Description	Detailed Information
1	Automatic process	1) Automatic turret (objective lens — indenter—objective lens shift automatically, motorized turret) 2) Test force automatic loading - Hold loading - unloading automatic 3) X-Y working stage move automatically (motorized X-Y table) 4) Software with automatic measuring function 5) Automatic focus (working table motorized up and down)
2	Follow standard	GB/T4340, ASTM E-384, ISO/DIS 6507-2, JIS B-7734
3	Test Force	10g(0.098N), 25g(0.245N), 50g(0.49N), 100g(0.98N) 200g(1.96N), 300g(2.94N), 500g(4.9N), 1000g(9.8N)
4	Hardness scale	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1
5	Holding time	1-99 seconds, each step: 1 second
6	Indenter	It is a rectangular pyramid diamond indenter (angle 136°±0.5°)
7	Magnification	10X (observe) and 40X (measure) Objective lens 10X digital eyepiece with encoder Total: 100X, 400X
8	Industrial computer	10.1 inch touch screen smart computer with high identification Intel I CPU, RAM 4GHz, 60G
9	Test space	100*115mm (Height * Depth)
10	Machine Size	520*300*560mm (length*width*height)
11	Light source	Halogen lamp (imaging effect is more real/clear/light intensity can be adjusted)
12	Data output	1) Machine with built-in printer can print the test data directly 2) Machine with USB interface, it can export test data to USB flash 3) Machine can connect with printer and print test data directly
13	NG-OK judgement function	Setting min & max limit, machine will automatically process judgement function, test data mark NG or OK
14	Hardness Conversion	Convert to any hardness, the hardness scale must meet the national standard.

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3. System Dunctions

A. System interaction.

Controlling the action of hardness tester and getting information through automation. It will getting experimental parameters including control hardness tester turret, load, load time setting, lighting brightness adjustment and the current pressure, etc.

B. Platform interaction

According the setting direction, distance, speed, the electric control objective loading table will move in a variety of ways .

C. Digital imaging

Using the latest popular digital imaging technology, imaged through USB2.0 interface.

D. Hardness measurement

By automatic reading, manual reading, it can read Vickers hardness or knoop hardness value, the value can be converted into a variety of equivalent hardness value.

E. Output the result

It will store various test process data and the result data such as measurement result, measurement environment, indentation images, and it will print test reports and images.

4. Performance feature

A. Interact with hardness tester system

It will control the action and collect the parameters of hardness completely ,including the selection of hardness tester, indenter, the load time setting, brightness adjustment, starting the loading and getting the force value, selection of test method(HV/HK),getting the measured results(D1, D2, HV).

B. High accuracy and diversity of automatic object loading table controlling

1) The high accuracy automatic object loading table.

Repeated accuracy≤3μ; Minimum Step Distance≤1μ; Operation methods are manual control, electric control, computer control.

1) Convenient objective loading table controlling.

For software control object loading table, under the power status of ON or OFF, users can choose the manual control, electric control or computer control to work in any pattern;

Supporting the X, Y axis move at the same time that will save movement time.

2) Flexible pattern of computer control.

Moving to the fixed position: The table will directly move to the set position set software.

Moving to the fixed point: Select any point on the sample moving under the indenter.

Moving to the fixed direction: Click the mouse to control objective loading table to move in eight arbitrary directions, the moving interval can be set.

Moving arbitrary: Using mouse to drag and drop object loading table moving in any direction, making it easy for users to view the surface condition of sample;

Moving with different speeds: When table moves, there are several speed can be selected;

Other functions: With professional functions of setting the original position arbitrarily, automatic reset, mechanical position limit, and so on, all these can meet various requirements.

3) Multiple objective loading table application pattern.

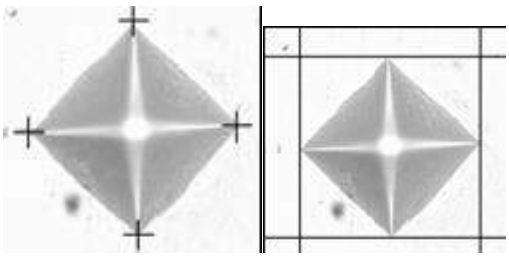
The software will offer a variety of programmatic sample test methods through the combination of a variety of ways such as controlling hardness tester, controlling automatic objective loading table, digital imaging, Automatic/manual reading, such as automatic/manual readings.

C. High identification of digital imaging technology.

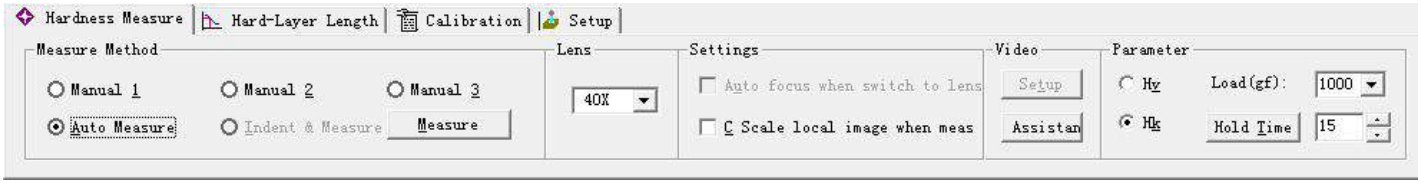
Using High identification digital imaging system, the highest resolution can reach 3 million pixels that far surpass the resolution of common analog camera, provides a basis for high accuracy measurement.

With USB2.0 interface Plug and play, charged plug, makes installation and maintenance very easy, it can finish all installation, commissioning, maintenance working, no need to shut down the power computer.

Supports a variety of image storage formats, satisfy customers' different needs.



Support manual measure and automatic measure:
Manual measure including: Four-points Measurement, Three-sides Measurement, Diagonal Measurement,
Automatic Measurement: This way need the indentation be clear



D. Unique advanced measurement technology, guarantee the high accuracy and repeatability of measurement.

1） Convenient and applicable scaling function -- -- -- -- -- using the standard test card, easy to proceed the work of whole system.

2） Advanced automatic reading technology -- -- -- -- -- The advanced automatic reading technology not only can get sub-pixel, high accuracy and repeatability of the results, but also applicable to the common indenter image even including a small amount of rust, scratches, uneven light , light corrosive images ,the measurement speed is super-fast.

3） Unique manual taking, automatic search point technology -- -- -- -- -- the user can roughly get the point near by the four vertices of indentation , the system will identify the best vertex position automatically and read directly; Not only meet the general user’s habit but also greatly reduce user’s labor force.

4） General manual measurement method -- -- -- -- -- including measuring four vertices 2 diagonal measuring, etc. when proceed four vertices measuring, users can take four point in any order, convenient for the users.

E. Perfect functions of dealing with results, storage and output.

1） Hardness conversion

According to the national standard, the conversion of a variety of hardness value can proceed automatically and display real-time.

2） Hardness - depth curve

According to measured data, it can draw the hardness curve -- -- -- -- -- depth curve; And can choose more curves to merge multiple curves to display, or display one by one pattern, or by other patterns.

3） Complete test parameters and results record.

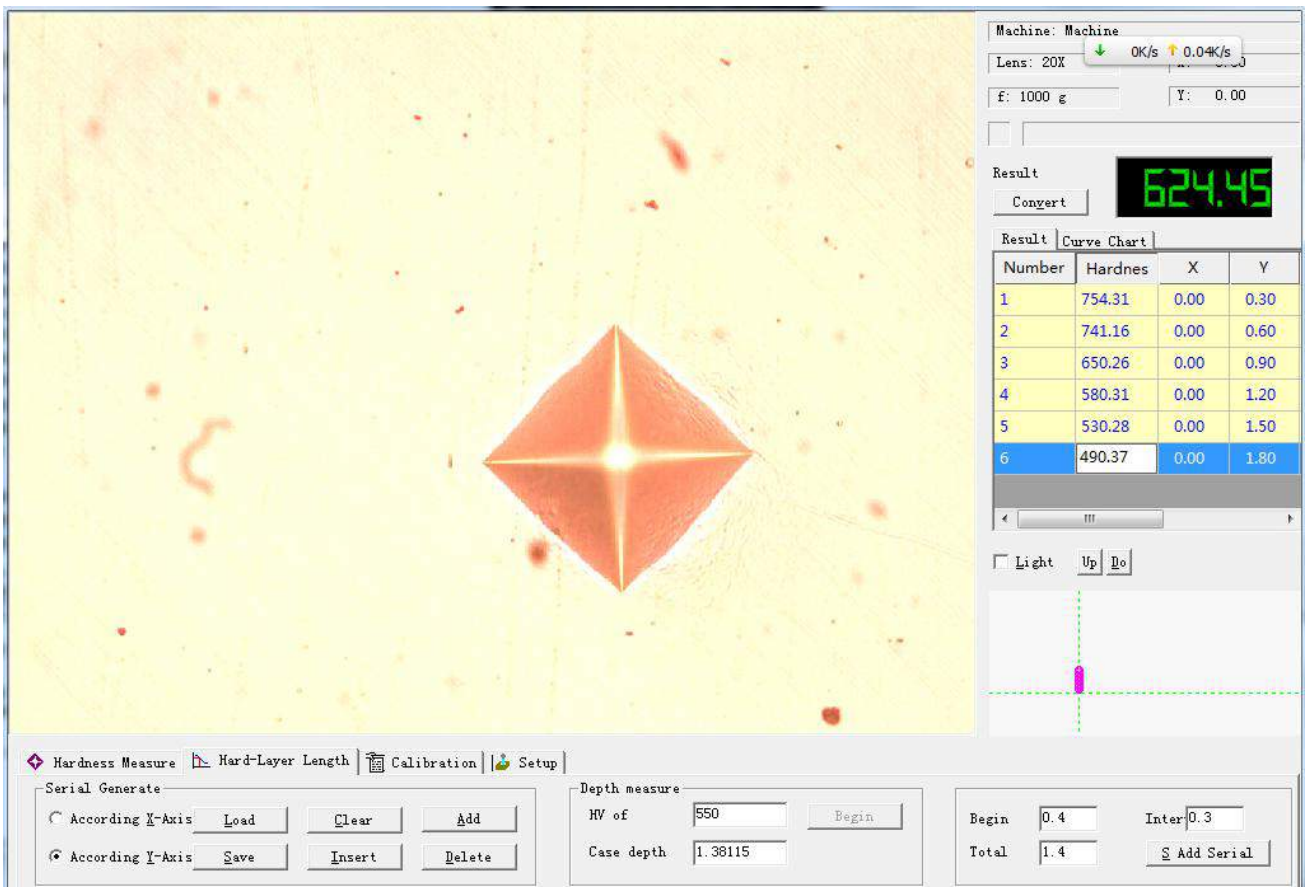
Keep all results of the test data, combined with image storage, it can store the measured data, including D1, D2, HV values, platform position X, Y, and a test force, load holding time, experiment method, calibration system and all other data and test parameters.

4） Various ways of records

It can Customized various formats such as WORD, EXCEL according to the customer‘s request.

5） Fixed multiplying power to print

Based user’s requirements, it can print the surface & shape of material according to the set ratio.



Software Interface

Accessories list					
Item Name	**Q'ty**	**unit**	**Item Name**	**Q'ty**	**unit**
Micro Vickers hardness tester host	1	set	10X digital eyepiece	1	pc
Automatic X-Y test table	1	pc	Thin specimen fixture	1	pc
Weights	6	pc	Flat mouth fixture	1	pc
Weights perch	1	set	Drill head fixture	1	pc
Standard diamond Micro Vickers indenter	1	pc	Horizontal adjusting screw	4	pc
Objective lens (10x,40x)	Each 1	pc	spirit bubble	1	pc
Standard hardness test block HV0.2, HV1	Each 1	pc	Anti-dust cover	1	pc
Fuse	2	pc	software	1	set
Warranty Card	1	pc	CCD camera (physical pixel 3 million）	1	set
Assistant tool	1	set	camera interface	1	pc
Manual Book	1	set			

Touch Screen Industrial Computer with hardness measurement software

Automatic X-Y stage (motorized X-Y stage)

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